



Article

The Implications of Digital Transformation for Human Resource Management in the Iraqi Commercial Banking Sector

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Abstract: The study generally aims to identify the nature and magnitude of the implications of digital transformation for Human Resource Management (HRM) practices in the investigated banks. The research problem centers on the limited understanding and awareness of the nature and extent of the impacts imposed by digital transformation on HRM practices in commercial banks, as well as the extent to which these practices can evolve from a traditional administrative role into a strategic role that enables organizations to successfully lead digital transformation initiatives. To address this issue, the study was conducted across ten commercial banks, namely: Development Bank, Iraqi National Bank, Iraqi Investment Bank, Bank of Baghdad, Ashur International Bank, Credit Bank of Iraq, Region Trade Bank, Gulf Commercial Bank, Al-Mansour Bank, and Middle East Bank. A questionnaire was employed as the primary data collection instrument to gather responses from the study participants. The final sample consisted of 110 valid responses out of 125 distributed questionnaires. The collected data were analyzed using the descriptive-analytical approach to test the study hypotheses. Various statistical techniques were employed, and a five-point Likert scale was utilized to assess the respondents' perceptions and measure the level of their responses. The findings revealed a positive effect of digital transformation on Human Resource Management practices, although with varying degrees of influence. The results further indicate that digital transformation enhances decision-making processes through the adoption of advanced digital systems. The study recommends expanding the use of digital technologies and establishing systematic and scientific mechanisms for future implementation stages to ensure the optimal utilization of advanced technologies and human capabilities, thereby contributing positively to the enhancement of Human Resource Management practices.

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1. Introduction

In recent years, the world has witnessed rapid developments that have led to the emergence of digital transformation as one of the most significant strategic orientations of the contemporary era. Digitalization has become a key driver of organizational transformation in the twenty-first century. The accelerated advancement of information and communication technologies has reshaped business models and administrative processes within the banking sector. Digital transformation is no longer merely the adoption of technology; rather, it has evolved into a comprehensive strategic transformation that affects organizational structures, decision-making processes, and resource management, with the aim of enhancing operational efficiency and achieving

sustainable competitive advantage. Efforts toward digital transformation are not limited to the development of electronic banking services or the modernization of technological infrastructure; they also encompass human capital management, which is considered one of the critical determinants of successful digital transformation. Within this context, Human Resource Management (HRM) practices have undergone substantial transformation as a result of digital technologies, which have reshaped training and development, performance appraisal, and compensation practices in order to improve the efficiency of banking operations and enhance employees' skills to meet the evolving requirements of the digital economy. Nevertheless, the banking sector continues to face several challenges related to the development of digital capabilities, the management of organizational change, and the maintenance of a balance between technological and human dimensions within organizations. Although these factors represent key determinants of the success or failure of digital initiatives, they have received comparatively limited attention. Consequently, a knowledge gap remains regarding the nature of the transformation brought about by digitalization in HRM practices within commercial banks operating in environments characterized by diverse organizational and technological challenges. Commercial banks in Iraq have increasingly adopted digital technologies in response to global technological developments, with the objectives of enhancing financial inclusion and developing the digital infrastructure of the banking sector. However, the success of these initiatives has become closely associated with banks' ability to develop their human resources, enhance employees' competencies, and redesign managerial practices in accordance with the requirements of the digital environment. Accordingly, this study seeks to examine and analyze the implications of digital transformation for Human Resource Management practices in the Iraqi commercial banking sector. Specifically, it investigates the impact of digital transformation on key HRM practices and explores the opportunities and challenges associated with this transformation. The study aims to contribute to the existing body of theoretical literature while providing practical insights that support Iraqi commercial banks in achieving a more efficient and sustainable digital transformation.

2. Materials and Methods

Research Problem

Commercial banks in Iraq are facing increasing pressure to adopt digital transformation and automate their operations. Although digital transformation has had a significant impact on the nature of the products and services offered by banks, they continue to face challenges regarding the responsiveness of their internal systems, particularly Human Resource Management (HRM) practices, to rapidly evolving technological changes. Traditional HRM practices are no longer capable of meeting emerging digital requirements due to deficiencies in digital skills and expertise, in addition to the challenge of employee resistance to change. The central research problem lies in the limited understanding and awareness of the nature and magnitude of the implications of digital transformation for Human Resource Management practices in commercial banks listed on the Iraq Stock Exchange, as well as the extent to which these practices can evolve from a traditional administrative role into a strategic role that enables organizations to successfully lead digital transformation initiatives. Accordingly, the research problem is expressed through the following main question:

"What are the implications of digital transformation for Human Resource Management practices in commercial banks listed on the Iraq Stock Exchange?"

From this main question, the following sub-questions are derived:

1. What is the current state of digital transformation implementation in the investigated banks?
2. To what extent does digital transformation contribute to the development of Human Resource Management (HRM) practices within the Iraqi banking environment?

Research Significance

The significance of this study stems from its focus on a contemporary issue, as it seeks to examine and analyze the impact of digital transformation on Human Resource Management (HRM) practices, particularly training and development as well as compensation systems, within commercial banks and the challenges associated with these transformations. Furthermore, the study highlights the role of digital transformation in reducing administrative HR costs and minimizing human errors. It also provides a set of practical indicators that can assist decision-makers in evaluating the feasibility and efficiency of investments in human capital and directing such investments toward digital transformation initiatives within commercial banks listed on the Iraq Stock Exchange.

Research Objectives

The primary objective of this study is to identify the nature and extent of the implications of digital transformation for Human Resource Management (HRM) practices in commercial banks listed on the Iraq Stock Exchange. From this overarching objective, the following specific objectives are derived:

1. To determine the level of adoption of the dimensions of digital transformation (technological, financial, and administrative) in the investigated banks, taking into consideration the perspectives of both management and employees.
2. To assess the current state of digital Human Resource Management practices and evaluate their responsiveness to technological changes.

Research Methodology:

The study adopted the descriptive-analytical approach. The descriptive aspect was utilized to collect data and establish the theoretical framework of the study variables through an extensive review of Arabic and international books, previous studies, academic journals, periodicals, and peer-reviewed publications. The analytical aspect was employed through the use of a questionnaire based on a five-point Likert scale as the primary instrument for data collection. The collected data were subsequently analyzed using appropriate statistical techniques to measure and examine the study variables.

Research Hypotheses:

The study is based on the following main hypothesis:

There is a statistically significant effect of digital transformation on Human Resource Management (HRM) practices in commercial banks listed on the Iraq Stock Exchange.

Population and Sample of the Study:

The study population consists of commercial banks listed on the Iraq Stock Exchange. The study sample was selected purposively from those banks that regularly publish their annual reports without interruption during the study period. Accordingly, the sample comprised ten commercial banks deemed appropriate for testing the study variables.

Limits of the Study:

Spatial boundaries: Iraq Stock Exchange – listed commercial banks.

Temporal boundaries: The study covers the time series for the period (2019–2024).

Chapter Two: Theoretical Framework

The Theoretical Framework of Digital Transformation

The Concept of Digital Transformation:

Digital transformation has become one of the most widely discussed concepts in recent years due to its significant importance in the changes experienced by organizations as a result of digital advancements, aiming to leverage digital technologies and integrate them with institutional strategies and operations. This leads to substantial transformations within organizations, particularly in the banking sector, with significant impacts on strategies and organizational structures [1]. The definitions of digital transformation vary across different studies that have addressed the concept. Accordingly, digital transformation has been defined as “the integration of digital technologies into all areas of business, fundamentally changing how banks operate and deliver value to customers. It is not merely about adopting technologies and implementing new strategies, but also involves a cultural transformation that requires banks to continuously challenge the status quo, experiment with emerging technologies, and adapt to evolving customer needs. It aims to improve the organization by introducing

major changes in its characteristics through a set of information, computing, and communication technologies" [2]. Digital transformation is also considered "a foundation for the development of business and services and for enhancing their efficiency and effectiveness. It is an inevitable requirement for all organizations seeking to develop and improve their strategies, operations, and services, and to enable communication at the organizational level, whether internally between departments and organizational structures or externally with customers, as it has become a natural process for organizations that claim to be leaders of change in a highly competitive environment" [3].

Based on the above, the researcher views digital transformation in the banking sector as a technological, organizational, and cultural development process and a strategic tool adopted by banks to meet customer needs and adapt to employee requirements by optimally utilizing digital technologies. It also involves innovating modern banking services, improving user experience, and digitizing operations, in addition to employing more flexible digital capabilities in line with continuous developments. This is aimed at enhancing organizational and strategic performance, reducing banking risks, and strengthening competitive advantage, ultimately leading to value creation for the bank. Justifications for the Transition from Traditional Banking to Electronic Banking

The banking sector has been increasingly shifting toward digital technologies due to the widespread diffusion of technology, internet networks, and the growing number of users. This development has facilitated the rapid and comprehensive exchange of information, making technological advancement an urgent necessity for the improvement of banking services. Consequently, banking institutions are required to develop appropriate strategic plans to adapt to global banking changes and evolving market conditions.

Technological development provides the banking sector with opportunities to expand and market banking services to customers both locally and internationally, thereby achieving a competitive advantage in banking markets. Traditional banks have increasingly adopted.

The Importance and Dimensions of Digital Transformation

Digital transformation is of paramount importance in the contemporary era, as it can be leveraged to achieve success and advancement, as follows [4]:

1. It contributes to the optimal utilization of banking assets, enables faster access to information, enhances transaction security, and reduces operational costs.
2. It improves customer experience through the development of strategies focused on delivering high-quality and differentiated services.
3. It enables the banking sector to extract and process large volumes of data, develop customized products and services, and enhance production-related technologies.
4. It enhances efficiency and reduces costs through process simplification, automation, and increased public engagement, thereby improving customer satisfaction through better service delivery.
5. Digital technologies increase transparency and accountability in banking operations by providing open data and digital reports, and they support decision-making processes through advanced data analytics.

The dimensions of digital transformation are generally classified into three main dimensions:

Technological Dimension:

This dimension refers to the fundamental infrastructure of hardware, networks, software, and data centers that support banking services and information systems, facilitating the flow and processing of information within the bank or across broader networks. The infrastructure includes physical components such as servers, cables, routers, and data storage devices, as well as virtual components such as databases, software applications, and cloud services [5].

Administrative Dimension:

This dimension represents a human and social process in which the efforts of individuals and groups are integrated to achieve organizational objectives. It focuses on

the optimal utilization of available material, technological, and human resources to achieve the goals for which the organization was established [6].

Financial Dimension:

The financial dimension is one of the main drivers and essential components of digital transformation in banking institutions. It is not possible to evaluate other aspects without considering financial requirements and the availability of capital necessary to manage digital transformation processes. Accordingly, most institutions, particularly the banking sector, allocate specific budgets for digital transformation initiatives to protect their data and information, meet customer needs, and ensure sustainability and competitiveness in the market [7]

Risks Facing the Digital Transformation Process

Digital transformation across various institutions and sectors faces several challenges. Despite the significant benefits offered by digital technologies, there are multiple risks associated with modern technologies that threaten organizational stability and security, particularly in financial institutions. If not effectively managed, digital transformation may negatively affect competition among banks and firms, as well as their ability to retain customers. It may also lead to various operational risks, including information deficiencies, human errors, and external interference. Furthermore, challenges arise related to data quality and protection, alongside increasing cybersecurity threats that endanger information security and organizational systems [8]. In many cases, these systems are highly complex and require a long time to be implemented effectively. Such complexity makes them vulnerable to both internal and external threats, in addition to potential disruptions caused by failures in service providers' performance. Consequently, cybersecurity risks are considered among the most significant risks emerging from these challenges.

The Concept of Human Resource Management Practices

The field of Human Resource Management (HRM) practices has witnessed rapid developments, as all areas of human activity have become increasingly aware of the importance of these practices in ensuring the effective functioning of organizations and the achievement of their intended objectives. Modern technological advancements have contributed to the development of innovative HRM practices and approaches aimed at improving organizational work culture and encouraging employees to exert their best efforts and performance in support of organizational goals. Given the continuous changes characterizing the contemporary business environment, it has become essential for organizations to adopt advanced HRM practices. Banking institutions, in particular, are required to develop or adopt modern operational systems that enhance employees' efficiency and expertise while supporting value creation, as such practices play a crucial role in improving the accumulation, organization, and effective utilization of human capital knowledge.

Human Resource Management practices have been defined as "a set of internally coherent and consistent practices designed to enhance employees' competence, motivation, and commitment, thereby enabling organizations to become more effective and achieve a sustainable competitive advantage" [9]. They have also been defined as "a set of interrelated activities, functions, and processes aimed at attracting, developing, and retaining valuable human resources, as well as managing workforce surpluses. These practices include recruitment, development, compensation determination, and other systems associated with the management of employees" [10]. From the researcher's perspective, Human Resource Management practices represent a set of methods and functions undertaken by the HR department in accordance with predefined strategies and objectives to enhance workforce efficiency and improve employee performance. This is particularly important in Iraqi commercial banking institutions, where efficiency and flexibility are essential for executing banking operations effectively. These practices encompass continuous training and development, the enhancement of reward and compensation systems in line with prevailing economic conditions within the banking environment, and the implementation of performance appraisal systems that provide

feedback for improving administrative and financial processes and enhancing the quality of banking services delivered.

The Importance of Human Resource Management Practices

Human Resource Management (HRM) practices are of considerable importance for organizations operating in dynamic and rapidly changing environments, particularly banking institutions. The importance of HRM practices can be highlighted through the following aspects [11]:

1. Banking institutions operate in continuously evolving environments due to advanced technological developments, market fluctuations, and other external factors. HRM practices enable these institutions to adapt and keep pace with rapid changes.
2. HRM practices allow organizations to respond more quickly to market trends and gain a competitive advantage. These practices are particularly important in organizations that rely on creativity and innovation, which are considered key drivers of organizational success.
3. Advanced HRM practices help organizations reduce labor costs by enabling them to adjust workforce size, utilize part-time employment arrangements, adopt remote working options, and optimize costs according to the requirements of financial and administrative services.
4. In highly competitive business environments, organizations with advanced HRM practices are often more attractive in recruiting and retaining highly qualified talents and expertise. Such practices contribute significantly to increasing employee satisfaction and retention.
5. HRM practices enable banking institutions to adapt effectively to changes in regulations and legislation, thereby ensuring compliance and reducing legal risks and workforce-related challenges.

Reasons for Focusing on Human Resources

The rationale for emphasizing human resources stems from the necessity of guiding employees, particularly newly recruited staff, to understand the various activities, assigned responsibilities, and expected performance requirements. In addition, organizations seek to develop employees' skills and capabilities and enhance their performance in alignment with organizational objectives. Organizations also strive to provide qualified human resources capable of assuming future responsibilities that correspond with accelerating technological changes, thereby enabling them to address challenges and risks arising from external environmental factors.

With increasing workforce diversity and cultural pluralism within organizations, HRM practices have increasingly focused on designing training programs aimed at maximizing the benefits of diversity and strengthening integration among employees. Furthermore, organizational hierarchies and workforce aging have encouraged institutions to adopt modern retraining and continuous development programs to equip employees with advanced skills and expertise required to keep pace with contemporary developments. These initiatives also help employees manage the complexities of modern jobs, which increasingly require specialized competencies, advanced expertise, and high levels of flexibility. Moreover, enhancing employees' intrinsic motivation is essential, as it constitutes a fundamental factor in improving financial and administrative services and increasing organizational efficiency [12].

Dimensions of Human Resource Management Practices

Human resources constitute a genuine source of strength for banking institutions and remain a central concern for organizations in general. The policies and procedures adopted for managing human resources continue to evolve in response to rapid technological advancements, with the aim of achieving organizational distinction, competitive superiority, strategic objectives, and effective planning. The key dimensions of HRM practices are as follows:

Training and Development

Training and development represent a systematic and continuous process aimed at enhancing employees' knowledge, competencies, and capabilities. This is achieved

through efforts designed to improve organizational performance by facilitating employees' acquisition of knowledge, experience, skills, and work-related behaviors, thereby generating positive changes in performance levels. Training and development are also regarded as a form of investment in human resources due to their role in increasing the efficiency and effectiveness of both employees and organizations [13].

Compensation

Compensation refers to the rewards received by employees from the organization as a result of superior performance compared with their peers. It includes two types of incentives: positive incentives based on rewards and bonuses, and negative incentives based on restrictions or disciplinary measures [14].

Performance Appraisal

Performance appraisal is one of the fundamental tools used by management to ensure that employees' activities and outputs are aligned with organizational objectives. It involves evaluating employees' job performance over a specified period and providing feedback regarding evaluation outcomes. Such feedback contributes to improving employee performance, reinforcing strengths, identifying areas requiring improvement, and enhancing job-related skills and capabilities [15].

The Relationship Between Digital Transformation and Human Resource Management Practices

The relationship between digital transformation and Human Resource Management practices is characterized by integration and mutual influence. Digital transformation plays a pivotal role in developing and modernizing HRM practices through the application of digital technologies across various HR functions, including training and development, performance appraisal, and compensation systems. These technologies contribute to improving the efficiency of administrative processes and service delivery, reducing time, effort, and costs, while providing accurate data to support human resource-related decision-making processes [16]. At the same time, Human Resource Management practices constitute a critical factor in the success of digital transformation initiatives. They contribute to preparing a workforce capable of effectively utilizing modern technologies through continuous training, digital skill development, and the promotion of a culture of innovation and change within banking institutions. HRM practices also help reduce resistance to change and create an organizational environment that supports digital transformation [17][18].

Therefore, the successful adoption of digital transformation does not depend solely on technology; rather, it requires effective Human Resource Management practices capable of leveraging digital capabilities and maximizing their benefits. This reflects a positive and mutually reinforcing relationship between the two concepts, contributing significantly to improved organizational performance and the achievement of sustainable competitive advantage.

3. Result and Discussion

Practical Framework

Following the review of the theoretical framework of the study variables, the identification of the theoretical relationships among them, and the formulation of hypotheses concerning the existence of effects between these variables, this chapter presents the empirical aspect of the study. It focuses on measuring the research variables and testing the proposed hypotheses based on a questionnaire consisting of several sections.

Measurement of Research Variables and Statistical Testing

To test the study hypotheses concerning the relationships among the variables, a questionnaire was employed as the primary data collection instrument. The questionnaire consisted of two main sections:

The first section was designed to measure digital transformation and comprised three dimensions. The first dimension measured the technological aspect and included nine items. The second dimension measured the financial aspect and consisted of eight items,

while the third dimension measured the administrative aspect and also consisted of eight items. The second section was devoted to measuring Human Resource Management (HRM) practices and comprised three dimensions. The first dimension measured training and development and included ten items. The second dimension measured compensation and consisted of nine items, while the third dimension measured performance appraisal and included eight items. A five-point Likert scale was employed to assess responses to all questionnaire items. The scale ranged from one point, representing "Strongly Disagree," to five points, representing "Strongly Agree," as illustrated in Table (2), as follows:

Table (1): Five-Point Likert Scale Scores

Response Category	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Score	5	4	3	2	1
The hypothetical mean of the five-point Likert scale was calculated as follows:					
Hypothetical Mean of the Five-Point Likert Scale = (Sum of Response Scores) / Number of Scale Categories = $\frac{5 + 4 + 3 + 2 + 1}{5} = 3$					

Response Rate

To ensure that the study requirements were adequately met, the researcher distributed 125 questionnaires to the study sample drawn from the commercial banking sector. Of these, 110 questionnaires were retrieved and deemed valid for statistical analysis, as presented in Table (2):

Table (2): Response Rate

Status	Number of Distributed Questionnaires	Number of Unreturned Questionnaires	Number of Valid Questionnaires for Analysis
Number	125	15	110
Percentage	100%	12%	88%

Validity and Reliability of the Questionnaire

The researcher verified the validity and reliability of the questionnaire through the following procedures:

Calculation of Cronbach's Alpha coefficients: Using the SPSS program, the results were as follows:

Table (3): Cronbach's Alpha Coefficients for Testing the Reliability of the Questionnaire.

Axis	Dimension	Cronbach's Alpha Coefficient		
		For the Dimension	For the Axis	For the Questionnaire
Digital Transformation Technologies	Technical Dimension	66.7%	83.8%	85.7%
	Financial Dimension	64.5%		
	Administrative Dimension	63.8%		
Human Resource Practices	Training and Development	82.3%	91.1%	
	Compensation	90.7%		

	Performance Appraisal	79.0%		
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The reliability coefficients of the research variables' dimensions exceed 60%, which is considered a high value from a statistical perspective.

Questionnaire reliability coefficients represent a set of procedures used to measure the consistency of the relative performance of questionnaire items over time. These coefficients aim to estimate the stability of the results obtained from the questionnaire over time by measuring the extent to which the results change. They indicate the likelihood of obtaining similar responses if the questionnaire is administered again at a different time. Cronbach's Alpha is used to calculate this coefficient:

$$\alpha = \frac{k}{k-1} \left(1 - \frac{\sum_{i=1}^k \sigma_i^2}{\sigma_T^2} \right)$$

Where:

- **k**: The number of items (questions) in the questionnaire.
- σ_i^2 : The variance of the responses to item *i*.
- σ_T^2 : The variance of the total scores of all questionnaire items.

The researcher also verified the reliability of the questionnaire by calculating the **Split-Half Reliability Coefficient**. The results were as follows:

Table (4): Split-Half Reliability Coefficients for Testing the Reliability of the Questionnaire.

Axis	Dimension	Split-Half Reliability Using Guttman or Spearman-Brown Coefficient		
		For the Dimension	For the Axis	For the Questionnaire
Digital Transformation	Technical	61.8%	82.5%	76.3%
	Financial	62.9%		
	Administrative	64.7%		
Human Resource Practices	Training and Development	72.4%	74.2%	
	Compensation	82.4%		
	Performance Appraisal	74.7%		

The table above shows a high level of reliability for all dimensions of the questionnaire, and the reliability coefficient for all axes exceeds 60%, which is considered statistically high values.

The split-half reliability of the questionnaire was calculated by dividing the questionnaire into two equal halves (usually odd and even items), then measuring the relationship between the two halves using Pearson correlation coefficient. After that, this coefficient is corrected using the Spearman-Brown formula to estimate the overall reliability, as follows:

- The questionnaire is divided into two halves: odd-numbered items and even-numbered items, or by any other method that ensures balance.

• The Pearson correlation coefficient (r) is calculated between the two halves.
The Spearman-Brown formula is applied to correct the correlation coefficient as follows:

$$sbR = 2r / (r + 1)$$

Where:

- **sbR**: The reliability coefficient after correction.
- **r**: The Pearson correlation coefficient between the two halves.

Descriptive Statistics of the Responses of the Study Sample:

After ensuring the validity and reliability of the scale, the researcher distributed it to the members of the questionnaire sample. The following presents the results of the descriptive statistics of the obtained responses:

First Axis:

First Dimension

Table (5): Responses of the Questionnaire Sample to the Items of the Technical Dimension

Items	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Mean*	Standard Deviation*	Coefficient of	Importance Rank
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage				
Q1	70	64%	39	35%	1	1%	0	0%	0	0%	4.627	0.504	0.109	1
Q2	52	47%	52	47%	5	5%	1	1%	0	0%	4.409	0.625	0.142	3
Q3	51	46%	47	43%	12	11%	0	0%	0	0%	4.355	0.672	0.154	6
Q4	43	39%	55	50%	9	8%	2	2%	1	1%	4.245	0.756	0.178	8
Q5	53	48%	48	44%	9	8%	0	0%	0	0%	4.400	0.638	0.145	4
Q6	42	38%	56	51%	11	10%	1	1%	0	0%	4.264	0.673	0.158	7
Q7	49	45%	52	47%	8	7%	1	1%	0	0%	4.355	0.658	0.151	5
Q8	33	30%	56	51%	16	15%	4	4%	1	1%	4.055	0.822	0.203	9
Q9	43	39%	60	55%	7	6%	0	0%	0	0%	4.327	0.592	0.137	2
Mean, Standard Deviation, Coefficient of Variation, and Importance Rank for the Technical Dimension											4.337	0.348	0.080	1

The weighted mean of the questionnaire responses was calculated according to the five-point Likert scale using the following formula:

$$X = \frac{\sum w * f}{n}$$

Where:

- **X**: Weighted Mean
- **W**: Weight assigned to each response option (Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree = 1)
- **f**: Frequency of responses (number of respondents who selected each option)
- **n**: Number of valid questionnaires

**The standard deviation is the most widely used measure of dispersion for assessing the degree of statistical variability. It indicates the extent to which values are spread within a statistical dataset. The lower the value of the standard deviation, the lower the dispersion of the data around the mean. This reflects a greater degree of agreement among the respondents in the questionnaire sample.*

**The coefficient of variation represents the ratio of the standard deviation to the mean. The lower the coefficient of variation, the lower the level of dispersion around the mean. This reflects the degree of variation in individual responses from the average responses of the sample members.*

**The coefficient of variation was used to determine the importance ranking of the items because it reflects the importance of each item. A lower coefficient of variation indicates a stronger convergence of opinions among the respondents in the questionnaire sample.*

Table (5) shows that the weighted mean for this dimension reached 4.337, which is higher than the hypothetical mean of the scale (3), with a low standard deviation (0.348) and a coefficient of variation (0.08). This indicates a high degree of convergence in the opinions of the sample respondents. This dimension ranked first among the dimensions of the first axis. The results also revealed that all items of the dimension achieved mean scores higher than the hypothetical mean of the scale.

Second Dimension

Table (6): Responses of the Questionnaire Sample to the Items of the Financial Dimension

Items	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Mean	Standard Deviation	Coefficient of Variation	Importance Rank
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage				
Q1	54	49%	42	38%	13	12%	1	1%	0	0%	4.355	0.724	0.166	4
Q2	47	43%	58	53%	4	4%	1	1%	0	0%	4.373	0.604	0.138	1
Q3	48	44%	40	36%	22	20%	0	0%	0	0%	4.236	0.765	0.181	6
Q4	33	30%	60	55%	13	12%	4	4%	0	0%	4.109	0.746	0.182	7
Q5	40	36%	49	45%	19	17%	1	1%	1	1%	4.145	0.799	0.193	8
Q6	39	35%	60	55%	9	8%	2	2%	0	0%	4.236	0.676	0.160	2
Q7	31	28%	64	58%	12	11%	2	2%	1	1%	4.109	0.734	0.179	5
Q8	56	51%	44	40%	9	8%	0	0%	1	1%	4.400	0.719	0.163	3
Mean, Standard Deviation, Coefficient of Variation, and Importance Rank for the Financial Dimension											4.245	0.387	0.091	3

From the table above, it can be observed that the weighted mean for this dimension is **4.245**, which is higher than the hypothetical mean of the scale (**3 points**), with a low standard deviation of **0.387**. The coefficient of variation reached **0.091**. Accordingly, this dimension ranked **third among the dimensions of the first axis**. This indicates a high degree of agreement and convergence in the respondents' opinions regarding the items of this dimension.

Third Dimension

Table (7): Responses of the Questionnaire Sample to the Items of the Administrative Dimension

Items	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Mean	Standard Deviation	Coefficient of Variation	Importance Rank
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage				
Q1	73	66%	29	26%	8	7%	0	0%	0	0%	4.591	0.625	0.136	2
Q2	52	47%	56	51%	1	1%	1	1%	0	0%	4.445	0.568	0.128	1
Q3	42	38%	55	50%	11	10%	2	2%	0	0%	4.245	0.706	0.166	4
Q4	32	29%	60	55%	14	13%	4	4%	0	0%	4.091	0.749	0.183	6
Q5	39	35%	47	43%	19	17%	4	4%	1	1%	4.082	0.869	0.213	7
Q6	37	34%	55	50%	16	15%	2	2%	0	0%	4.155	0.732	0.176	5
Q7	44	40%	42	38%	18	16%	6	5%	0	0%	4.127	0.879	0.213	8

Q8	46	42%	54	49%	8	7%	2	2%	0	0%	4.309	0.687	0.160	3
Mean, Standard Deviation, Coefficient of Variation, and Importance Rank for the Administrative Dimension											4.256	0.390	0.092	2
Mean, Standard Deviation, Coefficient of Variation, and Importance Rank for the Digital Transformation Axis											4.282	0.319	0.075	1

The table above shows that the weighted mean for this axis is **4.282**, which is higher than the hypothetical mean of the scale (**3 points**), with a low standard deviation of **0.319**, while the coefficient of variation reached **0.075**. This indicates a high degree of agreement and convergence in the respondents' opinions regarding the items of this axis. Accordingly, this axis ranked **first among the questionnaire axes**.

Second Axis

First Dimension

Table (8): Responses of the Questionnaire Sample to the Items of the Training and Development Dimension

Items	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Mean	Standard Deviation	Coefficient of Variation	Importance
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage				
Q1	58	53%	43	39%	8	7%	1	1%	0	0%	4.436	0.671	0.151	3
Q2	39	35%	57	52%	11	10%	3	3%	0	0%	4.200	0.727	0.173	6
Q3	46	42%	50	45%	12	11%	1	1%	1	1%	4.264	0.762	0.179	8
Q4	39	35%	51	46%	19	17%	1	1%	0	0%	4.164	0.736	0.177	7
Q5	43	39%	54	49%	12	11%	0	0%	1	1%	4.255	0.722	0.170	5
Q6	44	40%	46	42%	17	15%	3	3%	0	0%	4.191	0.796	0.190	10
Q7	48	44%	55	50%	6	5%	1	1%	0	0%	4.364	0.631	0.145	2
Q8	46	42%	57	52%	6	5%	1	1%	0	0%	4.345	0.627	0.144	1
Q9	33	30%	67	61%	7	6%	3	3%	0	0%	4.182	0.666	0.159	4
Q10	37	34%	63	57%	5	5%	4	4%	1	1%	4.191	0.760	0.181	9
Mean, Standard Deviation, Coefficient of Variation, and Importance Rank for the Training and Development Dimension											4.259	0.443	0.104	1

The table above indicates that the weighted mean for this dimension is 4.259, which is higher than the hypothetical mean of the scale (3 points), with a low standard deviation of 0.443, while the coefficient of variation reached 0.104. This indicates a very high degree of agreement and convergence in the respondents' opinions regarding the items of this dimension. Accordingly, this dimension ranked first among the dimensions of the second axis of the questionnaire.

Second Dimension

Table (9): Responses of the Questionnaire Sample to the Items of the Compensation Dimension

Items	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Mean	Standard Deviation	Coefficient of Variation	Importance Rank
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage				
Q1	32	29%	39	35%	22	20%	10	9%	7	6%	3.718	1.166	0.314	9
Q2	29	26%	50	45%	19	17%	11	10%	1	1%	3.864	0.953	0.247	2

Q3	25	23%	49	45%	25	23%	7	6%	4	4%	3.764	0.995	0.264	4
Q4	36	33%	38	35%	17	15%	17	15%	2	2%	3.809	1.113	0.292	8
Q5	37	34%	38	35%	26	24%	5	5%	4	4%	3.900	1.040	0.267	6
Q6	33	30%	41	37%	23	21%	11	10%	2	2%	3.836	1.027	0.268	7
Q7	31	28%	35	32%	39	35%	3	3%	2	2%	3.818	0.940	0.246	1
Q8	31	28%	46	42%	22	20%	7	6%	4	4%	3.845	1.024	0.266	5
Q9	31	28%	47	43%	23	21%	5	5%	4	4%	3.873	0.996	0.257	3
Mean, Standard Deviation, Coefficient of Variation, and Importance Rank for the Compensation Dimension											3.825	0.780	0.204	3

The table above indicates that the weighted mean for this dimension is 3.825, which is higher than the hypothetical mean of the scale (3 points), with a low standard deviation of 0.780, while the coefficient of variation reached 0.204. This indicates a very high degree of agreement and convergence in the respondents' opinions regarding the items of this dimension. Accordingly, this dimension ranked third among the dimensions of the second axis of the questionnaire.

Third Dimension

Table (10): Responses of the Questionnaire Sample to the Items of the Performance Appraisal Dimension

Items	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Mean	Standard Deviation	Coefficient of Variation	Importance Rank
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage				
Q1	41	37%	48	44%	19	17%	1	1%	1	1%	4.155	0.804	0.193	5
Q2	23	21%	61	55%	24	22%	2	2%	0	0%	3.955	0.709	0.179	3
Q3	37	34%	49	45%	22	20%	2	2%	0	0%	4.100	0.778	0.190	4
Q4	33	30%	53	48%	21	19%	2	2%	1	1%	4.045	0.806	0.199	6
Q5	47	43%	52	47%	9	8%	1	1%	1	1%	4.300	0.736	0.171	1
Q6	24	22%	53	48%	25	23%	6	5%	2	2%	3.827	0.897	0.234	8
Q7	28	25%	49	45%	28	25%	5	5%	0	0%	3.909	0.830	0.212	7
Q8	36	33%	57	52%	15	14%	2	2%	0	0%	4.155	0.719	0.173	2
Mean, Standard Deviation, Coefficient of Variation, and Importance Rank for the Performance Appraisal Dimension											4.056	0.501	0.123	2
Mean, Standard Deviation, Coefficient of Variation, and Importance Rank for the Human Resource Practices Axis											4.055	0.468	0.115	3

It can be observed from the table above that the weighted mean for this axis is 4.055, which is higher than the hypothetical mean of the scale (3 points), with a low standard deviation of 0.468, while the coefficient of variation reached 0.115. This indicates a very high degree of agreement and convergence in the respondents' opinions regarding the items of this axis. Accordingly, this axis ranked third among the questionnaire axes, while this dimension ranked second among the dimensions of the second axis of the questionnaire.

Hypothesis Testing Results:

After completing the measurement of the research variables that were used, presented, and discussed in the second and third chapters of the study, the hypothesis will be tested, and the results obtained from measuring these variables will be analyzed and interpreted as follows:

Main Hypothesis: "There is a statistically significant effect of digital transformation on human resource practices."

To test this hypothesis, the following linear regression model was formulated:

$$MRP_{it} = b_0 + b_1 DT_{it} + \varepsilon_{it}$$

Using the statistical software SPSS, the results were as follows:

Table (11): Summary of the Hypothesis Testing Model

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.559 ^a	.312	.306	.389
a. Predictors: (Constant), DT				
b. Dependent Variable: MRP				

The table above (Model Summary) shows that the correlation coefficient (R) between the variables reached 0.559, which is statistically strong. The coefficient of determination (R Square) reached 0.312, meaning that the independent variable explains 31.2% of the variation in the dependent variable according to this statistical model. The standard error of the estimate was 0.389, and the lower this type of error, the better the statistical accuracy of the model.

Table (12): ANOVA Test of the Hypothesis

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.446	1	7.446	48.963	.000 ^b
	Residual	16.424	108	.152		
	Total	23.870	109			
a. Dependent Variable: MRP						
b. Predictors: (Constant), DT						

The table above (ANOVA) shows that the calculated F-value reached 48.963, which is greater than the tabulated F-value based on the degrees of freedom df (1,108), which equals 3.93 at a 5% significance level. The significance level (Sig) is **0.000**, which is lower than the acceptable error margin in social sciences set at 0.05. This indicates the suitability and statistical significance of the regression model used to test the hypothesis.

Table (13): Regression Coefficients of the Hypothesis

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.552	.502		1.099	.274
	DT	.818	.117	.559	6.997	.000
a. Dependent Variable: MRP						

The most important finding shown in the table above is that the slope value of the regression equation reached 0.818, which represents the effect of the independent variable on the dependent variable (through the B coefficient). The positive value of the coefficient indicates a positive relationship between the independent and dependent variables. In other words, any increase in the independent variable (digital transformation) by one unit

leads to an increase of 81.8% in the dependent variable (human resource practices), while holding all other variables constant. The significance level of the T-statistic is **0.000**, which is lower than the acceptable error level in social sciences (0.05). Therefore, the sample data provide strong evidence to accept the hypothesis, confirming that the effect is statistically significant.

4. Conclusion

1. The results showed a positive relationship between digital transformation and human resource management practices at varying degrees, as the dimensions of digital transformation are associated with human resource management practices among employees in the sample banks. This supports decision-making processes through the use of modern systems.
2. The adoption of digital transformation in any organization requires creating an appropriate environment that includes all requirements (technical, administrative, human, and financial) to support its success, ensuring adaptation to technological changes and work methods.
3. Human resource management practices can contribute to improving overall performance in the sample commercial banks by enhancing operational efficiency, strengthening interdepartmental cooperation, facilitating knowledge sharing, and supporting employee training and development.
4. Digital transformation plays a major role in bringing changes to work systems in order to achieve fundamental improvements through the available technical, financial, and human resources.
5. Digital transformation is not merely the use of digital technologies; rather, it is a comprehensive change in work mechanisms to make them more efficient and to introduce digital HR practices that simplify and speed up operations. This indicates that adopting digital transformation has become an essential necessity for all institutions, especially commercial banks seeking to develop and improve their services.

Recommendation

1. The need to expand the use of digital technologies and establish systematic and scientific mechanisms for future stages, ensuring optimal use of advanced technologies and human capabilities, which positively enhances human resource management practices.
2. The need to conduct training programs for human resources staff in the field of digital transformation, especially new employees, regarding its concept and importance in their work, as well as digital HR practices.
3. The need to rely on the latest technologies, programs, and highly efficient human resources in human resource management, which leads to strengthening financial and organizational performance within banks.
4. The need to adopt and encourage new ideas and enhance innovation among employees in the use of digital technologies within commercial banks, thereby strengthening their competitiveness.
5. Digital transformation technologies represent a fundamental and effective tool in human resource management practices, as they contribute to improving performance and developing the business environment, thereby enhancing the growth and success of banking institutions.

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